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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PATHAK, SUDHANSHU C

ART UNIT	PAPER NUMBER
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2611

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/611,400

Applicant(s)

LIDSTROM ET AL.

Examiner

Sudhanshu C. Pathak

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on June 30th, 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on June 30th, 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-to-24 are pending in the application.

Claim Objections

2. Claim 2 (dependent on claim 1) is objected to because of the following:

The Claim (line 2) discloses "an upsampler that receives the first digital signal...", however Claim 1 discloses "an upconverter in signal communication with the modulator..." wherein the modulator modulates the data stream with a second modulation and encoding scheme. The specification in (Fig. 5, elements 526, 528) further discloses the second digital signal is upconverted. The rejections below are based on the second digital signal being upconverted.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 14 (dependent on claim 11) recites the limitation(s) " the upsampling means and DAC" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. These limitations however are disclosed in Claim 12. The art rejection for this claim is based on a dependency on Claim 12.
5. Claim 15 (dependent on claim 11) recites the limitation " the mixing means" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. This limitation however is disclosed in Claim 12. The art rejection for this claim is based on a dependency on Claim 12.

6. Claim 16 (dependent on claim 13 which is dependent on claim 11) recites the limitation "the IF.....the clock signal" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. This limitation however is disclosed in Claim 14 (dependent on claim 12), which discloses a clock signal, and the IF signal is disclosed in claim 12. The art rejection for this claim is based on a dependency on Claim 14 (which is rejected based on the dependency of claim 12 as mentioned above).
7. Claim 17 (dependent on claim 9 which is dependent on claim 1) recites the limitation "the mixing means" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. This limitation is however disclosed in claim 12. The art rejection for this claim is based on a dependency on Claim 12.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 9-10 (apparatus) & 11, 19-20 (means) & 21, 23-24 (method) are rejected under 35 U.S.C. 102(e) as being anticipated by Kwentus et al. (2004 / 0161031 A1).

In regards to Claims 1, 9-10, 11, 19-21 & 23-24, Kwentus discloses a transcoder for converting a received first digital signal with a first modulation and encoding scheme to a second digital signal with a second modulation and encoding scheme (Abstract, lines 1-12 & Fig. 6A-B & Fig. 2, element "transcoder" & Paragraph 11) {Interpretation: The reference discloses a communications signal transcoder to transcode a signal from first signal type (first digital modulation (8-PSK) and coding) to a second signal type (second digital modulation (QPSK) and coding)}, the transcoder comprising: a demodulator that produces a demodulated digital stream of data from the received first digital signal (Fig. 8, elements "received signal", "receiver", "transport processor" & Fig. 9, elements "I & Q", "satellite receiver", "transport processor" & Fig. 12, elements "steps 4-5" & Paragraph 77, lines 1-4 & Paragraph 79, lines 12-20 & Paragraph 81) {Interpretation: The reference discloses a satellite receiver which performs the receiver functionality (processing) of a 8-PSK receiver, thus demodulation of the received signal is inherent i.e. demodulation and decoding. Furthermore, the transport processor (implemented optionally) formats the data into a MPEG format, therefore in order to obtain the data the receiver has to perform demodulation and decoding}; a modulator in signal communication with the demodulator, where the modulator modulates the digital stream of data with the second modulation and encoding scheme (Fig. 8, elements "modulator", "2nd signal type" & Fig. 6A-B & Fig. 9, element "modulator" & Fig. 12, element "step 6" & Paragraph 12, line 8 & Paragraph 15, lines 14-17 & Paragraph 77, lines 6-13) {Interpretation: The reference discloses a modulator which modulates the data into

a QPSK modulation and specified encoding}; an upconverter in signal communication with the modulator, where the upconverter produces the second digital signal (Fig. 8, elements "ADC", "oscillator", "mixer", "frequency 3" & Paragraph 15, lines 19-30 & Paragraph 78, lines 9-17 & Paragraph 85) {Interpretation: The reference discloses an upconverter which upconverts the digital baseband signal of second modulation and encoding into L-band range so as to be compatible to a legacy set top box (STB)}. Kwentus further discloses the upconverter may be integrated on a single chip (Paragraph 85, lines 8-10). Kwentus further discloses the first modulation and encoding scheme to be 8-PSK turbo coding (Fig. 6B & Fig. 9, element "satellite receiver" & Paragraph 11, lines 3-5 & Paragraph 15, lines 1-3, 8-9) and the second modulation and encoding scheme is QPSK (Fig. 6B & Abstract, lines 9-10 & Paragraph 11, lines 7-8).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2-3 (apparatus) & 12-13, 15-18 (means) & 22 (method) are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwentus et al. (2004 / 0161031) in view of Lochhead et al. (2004 / 0142667).

In regards to Claims 2, 12 & 22, Kwentus discloses a transcoder comprising a demodulator; a modulator; and an upconverter as described above. However,

Kwentus does not disclose the upconverter to include an upsampler that receives the first digital signal and produces an upsampled signal; a complex mixer in signal communication with the upsampler, where the complex mixer is capable of producing an intermediate frequency ("IF") digital signal by upconverting the upsampled signal with an IF carrier signal; and a digital-to-analog converter ("DAC") in signal communication with the complex mixer, where the DAC is capable of producing the second digital signal having sampling replicas from the IF digital signal.

Lochhead discloses a upconverter to include an upsampler that receives the first digital signal and produces an upsampled signal (Paragraph 58 & Fig. 9, element 216); a complex mixer in signal communication with the upsampler, where the complex mixer is capable of producing an intermediate frequency ("IF") digital signal by upconverting the upsampled signal with an IF carrier signal (Paragraph 58 & Fig. 9, elements 210-214) {Interpretation: The reference discloses a complex mixer i.e. mixing "I" & "Q" complex symbols}; and a digital-to-analog converter ("DAC") in signal communication with the complex mixer, where the DAC is capable of producing the second digital signal having sampling replicas from the IF digital signal (Fig. 9, element "TO DAC"). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Lochhead teaches a digital upconverter comprising an upsampler; a complex mixer; and a DAC and this is implemented in the transcoder as described in Kwentus so as to up convert the QPSK modulated signal to an L-band frequency region signal in the digital domain

thus integrating the upconverter on the same integrated component as the modulator and minimizing the analog components such as a mixer and a local oscillator. Furthermore, it is inherent in the output spectrum of a conventional DAC to generate replicas of the input signal at multiples of the sampling frequency¹{Interpretation: This limitation is interpreted in light of the specification (Fig. 6)}.

In regards to Claims 3 & 13, Kwentus in view of Lochhead discloses a transcoder comprising a demodulator; a modulator; and an upconverter as described above. Kwentus further discloses the transcoder transcoding a signal of first signal type to a second signal type wherein the second signal type includes a QPSK modulated signal (Abstract, lines 1-12) {Interpretation: The reference discloses the signal to be a QPSK signal which consists of in-phase and quadrature phase components. Furthermore, the second signal is up converted comprising a DAC}. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Kwentus in view of Lochhead satisfies the limitations of the claim. Furthermore, it is inherent in the output spectrum of a conventional DAC to generate replicas of the input signal at multiples of the sampling frequency¹{Interpretation: The input signal has in-phase and quadrature components, thus their image replicas will be generated. This limitation is interpreted in light of the specification (Fig. 6)}.

In regards to Claims 15-18, Kwentus in view of Lochhead discloses a transcoder comprising a demodulator; a modulator; and an upconverter as described above.

¹ US 6,768,434(Column 1, lines 15-17, 39-45 & US 6,590,515(Fig. 3,element 50 & Column 2, lines 49-53)

Lochhead further discloses the complex mixer is connected to a numerically controlled oscillator (NCO) that produces the IF carrier that is utilized by the mixer to generate an upconverted signal (Fig. 9, element 210 & Paragraph 58). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Kwentus in view of Lochhead satisfies the limitation of the claim. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the clock frequency is greater than the IF signal since the clock frequency is also the DAC frequency and therefore to satisfy the Nyquist criteria must be twice the IF signal. Furthermore, the clock signal is also greater since the DAC frequency is to be greater than IF so as to output the combined IF data.

12. Claims 4-6 (apparatus) & 14 (means) are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwentus et al. (2004 / 0161031) in view of Lochhead et al. (2004 / 0142667) and further in view of Cole et al. (6,363,033).

In regards to Claims 4 & 14, Kwentus in view of Lochhead discloses a transcoder comprising a demodulator; a modulator; and an upconverter as described above. However, Kwentus in view of Lochhead does not disclose a clock signal is input in both the upsampler and DAC.

Cole discloses an apparatus comprising an upsampler and a DAC wherein the upsampling is done at the same frequency of the DAC (Column 7, lines 61-65 & Column 2, lines 48-52) {Interpretation: The reference discloses interpolation of an input sample signal so as to have the output sample signal at the same frequency of the DAC. Furthermore, a clock signal(s) in itself are inherent for the operation of an

upsampler and a DAC}. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Cole teaches implementing a clock to both the upsampler and a DAC and this is implemented in the transcoder as described in Kwentus in view of Lochhead so as to simplify the implementation of a DAC to a single bit DAC, thus satisfying the limitation of the claim.

In regards to Claims 5-6, Kwentus in view of Lochhead and further in view of Cole discloses a transcoder comprising a demodulator; a modulator; and an upconverter as described above. Lochhead further discloses the complex mixer is connected to a numerically controlled oscillator (NCO) that produces the IF carrier (Fig. 9, element 210 & Paragraph 58). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Kwentus in view of Lochhead satisfies the limitation of the claim. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the clock frequency is greater than the IF signal since the clock frequency is also the DAC frequency and therefore to satisfy the Nyquist criteria must be twice the IF signal. Furthermore, the clock signal is also greater since the DAC frequency is to be greater than IF so as to output the combined IF data.

13. Claims 7-8 (apparatus) are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwentus et al. (2004 / 0161031) in view of Lochhead et al. (2004 / 0142667) and further in view of Cole et al. (6,363,033) and further in view of Snell (5,764,113).

In regards to Claims 7-8, Kwentus in view of Lochhead in further view of Cole discloses a transcoder comprising a demodulator; a modulator; and an upconverter as described above. However, Kwentus in view of Lochhead in further view of Cole does not disclose the numerically controlled oscillator is an internal component of the transcoder.

Snell discloses implementing a digital modulator and a digital up converter on a single integrated circuit (Column 1, lines 17-24 & Column 3, lines 29-36 & Column 4, lines 47-53 & Column 5, lines 60-65 & Fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Snell teaches a fully integrated integrated circuit comprising a modulator and a NCO and this is implemented in the transcoder as described in Kwentus in view of Lochhead in further view of Cole so as to provide a fully integrated transcoder thus minimizing the components and therefore the complexity of the transcoder. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the NCO need not be integrated with the transcoder, so as to be able to vary the NCO values or the component itself depending on the application.

Conclusion

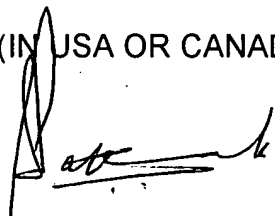
14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, it is recommended to the applicant to amend all the claims so as to be patentable over the cited prior art of record. A detailed list of pertinent references is included with this Office Action (See Attached "Notice of References Cited" (PTO-892)).

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (571)-272-3038. The examiner can normally be reached on M-F: 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571)-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Sudhanshu C. Pathak
Examiner
Art Unit 2611